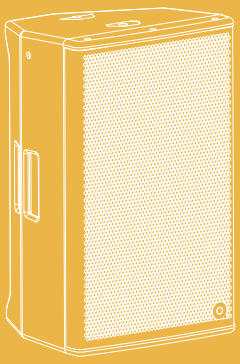
Quest engineering

Qmotion

User Manual

MODEL: QM 450A



Quest HYBRIDTEC

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Safety Precautions

- Be sure to read the instructions in this section carefully before use.
- Make sure you observe the instructions in this manual as the conventions of safety symbols and messages are very important.
- We also recommend you keep this instruction manual handy for future reference.

Safety Symbol and Message Conventions

Safety symbols described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of any risks.

Flying and installation of this speaker cabinet must be carried out by suitably qualified personnel following the locally authorised and approved safety standards.

Do not attempt to clean the painted enclosure with solvents or petrochemical based cleaners. Touching up scratched scan be done with polyester paint.

Installation that allows direct precipitation is not advised and installation practise must prevent liquids from entering the box.

Do not stack the speaker cabinet in a manner that could cause injury should a cabinet become dislodged.

Do not place sources of heat on the speaker cabinet such as lighting equipment or smoke machines, and where possible please keep out of direct sunlight.

WARNING

Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.

CAUTION

Before connecting or disconnecting any connections including power, make sure to set the master level control to counter clockwise off. This will prevent unexpected and possibly damaging noises from the system.

⚠ WARNING

When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- When moving the unit, be sure to remove its power supply cord from the wall outlet. Moving the unit with the power cord connected to the outlet may cause damage to the power cord, resulting in fire or electric shock. When removing the power cord, be sure to hold its plug to pull.
- Do not block the ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire.
- Avoid installing the unit in humid or dusty locations, in locations exposed to direct sunlight, near heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.

When the Unit is in Use

- Do not place objects on the unit as they can dislodge and cause personal injury and/or property damage.
- Make sure that the volume control is set to minimum position before power is switched on. Loud noise produced at high volume when power is switched on can impair hearing.
- Do not operate the unit for an extended period of time with the sound distorting. This is an indication of a malfunction or incorrect gain structure. Turn down the sound source and check for the source of distortion. Ignoring this can cause damage to the speaker system and under some circumstances can cause heat to generate and result in a fire.
- Contact your dealer as to cleaning procedure. If dust is allowed to accumulate inside the unit over a long period of time, a fire or damage to the unit may result.
- Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leavingthe unit unused for many days.

General Description

The QM450a powered speaker is a two way active bass reflex design suitable for mobile and installation use.

Quest HYBRIDTEC

Hybridtec Amplifier Technology

The amplifier power is supplied by Quest Engineering's new "Hybridtec" digital class D and analogue class A/B amplifier system. The Hybridtec amplifier is controlled by an internal analogue system controller. Simplified Controls on the rear of the QM-450A make operation easy. The QM-450A features an XLR input, XLR link output, Gain control, 110Hz High Pass/voice boost switch as well as individually coloured Peak\Clip\Signal\Power LED indicators providing clear and immediate visual indicators.

The QM450A is a multi-purpose loudspeaker equally at home as a front of house system or as a powered foldback monitor. The asymmetrical high frequency wave guide can be rotated to a wide coverage in foldback modes to give uniform close field coverage without feedback inducing hot spots.

This type of hybrid design is to save weight, lower potential heat output and also improve sonic performance. A limiter monitors RMS power for excessive input level.

Limiters and compressors are not a substitute for sensible operation. The system will sound its best when mixers and other signal processors are not driven into distortion.The design characteristics make the QM450A suitable for both full range use or as the Mid-High component of a multi way system with bass enhancement. Coupled with a Quest Engineering compact sub bass, the QM450A can act as part of a compact array, or stand alone point source multi way system for full range sound at medium to high sound pressure level.

Temporary installation is possible with the Addition of a 35-36 mm speaker stand. Wall mounting in the vertical and horizontal plane is possible with WB350i wall mounting kit.

Installation

Temporary installation is possible with the 35mm floor stand mounting in the base of the enclosure. Fold-back installation can give extra uniform stage performance by rotating the horn flare to the "fold-back" position.

Three M8 threaded inserts are installed for installation brackets. Two on the top and one on the base of the QM450A enclosure.

Accessories

WB350i Wall bracket vertical or horizontal mounting

Functional Design

The QM450A features an asymmetrical horizontal angle along one side which makes it suitable for use as a stage\foldback wedge when laid flat.

Solid Build Construction

The QM450A is well suited to all professional applications. The high grade lightweight ply casing is specially formulated to withstand demanding use and the heavy gauge power-coated steel grill ensures the driver and horn are always protected.

WARNING

Flying the box from one insert must not be attempted! Improper installation may result in damage, injury or death.

Connection Panel

1	Input Volume Control
2	High Pass Filter
3	Active and Clip Indicators
4	Line Level XLR Output
5	Line Level XLR Input
6	115V/230V Voltage Input Selector
7	Protection Fuse
8	Power ON/OFF Switch
9	Power Supply Input

Make sure voltage selector is set for your country's correct voltage.

CAUTION: Use only same fuse replacement. Please consult your Quest Engineering service agent.

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High Pass Filter

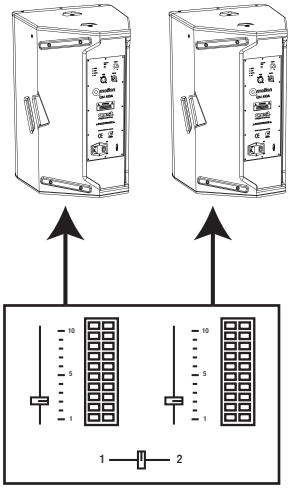
When in full range mode, the QM450A internal filter settings are set to give a good balance between voice and recorded music.

If using your QM450A with a sub bass system, depressing the 110 Hz filter will remove the low bass frequencies from the QM450A and provide a mid-range EQ suited to voice projection in the presence of high powered sub bass.

System Connections

As a mono stand-alone system

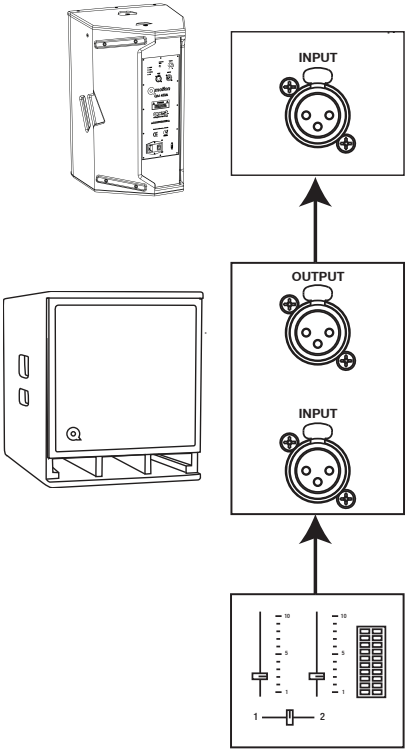
If a powered sub bass is to be added to the system, it is possible to switch the 110Hz high pass on to remove the low bass frequencies from the QM450A. This will give a “cleaner” vocal sound and make more power available for voice reproduction.



As part of a multi way powered system

If your powered sub bass system has an electronic crossover output.

Connecting the QM450A through the output of the sub bass crossover allows for the low bass to be directed to the sub bass and the upper bass/hi frequencies to be reproduced by the QM450A. This approach takes the low frequency load from the QM450A and makes more power available for mid/high output.



Speaker Placement as a Single Box or in Arrays

The QM450A is intended for use as a single speaker system or as part of a multiple speaker setup with or without sub bass reinforcement. It can also be installed in small arrays of up to three boxes per array for very wide coverage applications. When a group of point source 90 degree speaker boxes are placed together, it is possible to have “interference effect” between some of the boxes causing uneven frequency response. This can be particularly noticeable in the mid-high frequency area. If you intend to set up the QM450A as part of a multiple box array, see the section ‘Flying the QM450A’.

When positioning the speaker system on a stage, make sure the HF horn at the top of the speaker box is above the heads of the audience. At full power the output of the QM450A is very high and hearing damage can result from short to medium term exposure.

For best results when the QM450A is used as a front of house speaker, consider angling the box forward slightly to direct the HF horn to cover the audience area. The HF horn should be aimed away from the ceiling and focused on the intended area of coverage. This will minimize HF reflections, lower the reverberant field in the room and give better intelligibility.

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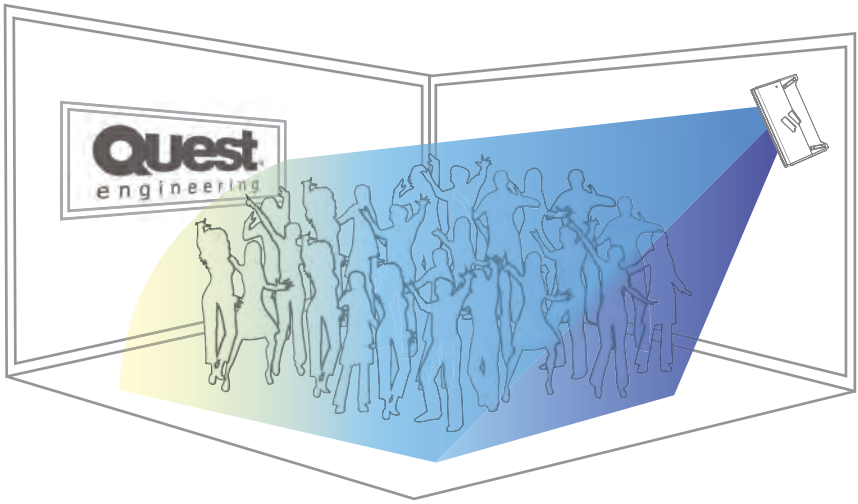
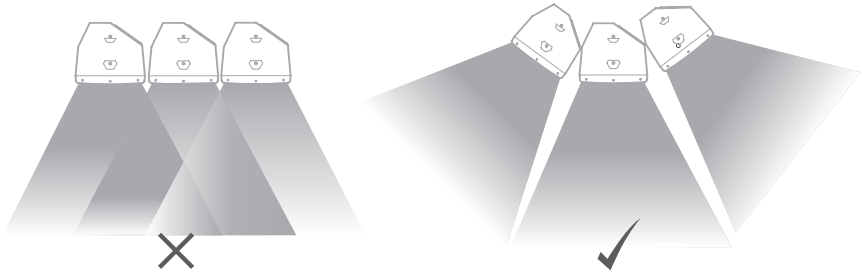


Ideal QM450A Flown Configuration

Flying the QM450A



Before suspending any speaker system always inspect all components (enclosure, rigging frames, track fittings, etc.) for cracks, deformations, corrosion, missing, loose or damaged parts that could reduce strength and safety of the array. Do not suspend the speaker system until the correct preparation of the installation site has been taken to avoid health risks during and after the completion of the installation. A licensed Professional Engineer must approve the placement and method of attachment to the structure prior to the installation of any overhead object.

Rotating the Horn Flare

The asymmetrical horn flare can be rotated through three separate planes of dispersion depending on the speaker box requirement and installation environment. The planes are vertical installation, horizontal installation and foldback monitor.

Good coverage of audiences often requires wide dispersion at the base of the horn flare to cover close listeners and a focused narrow dispersion at the top of the flare to beam to the back of the room.

The QM450A horizontal horn covers both “short-throw” and “long-throw” requirements in a single system. For the majority of installations (where the box is installed vertically), the asymmetrical horn should be used as supplied and will not need to be rotated.

For horizontal installation rotate 45 degrees so the arrow is pointing at the floor side so as to have the “beaming” facility at the top of the horn.

Foldback HF coverage

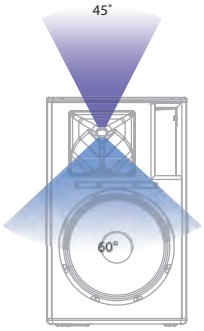
For stage foldback monitors the coverage must be wide when performers are close to the wedge and beam down the stage to minimize the spill off the stage that may interfere with the main PA.

For floor monitor use the horn must be rotated with its “wide” dispersion (arrow indicator), side directed towards the top of the horizontal floor cabinet.

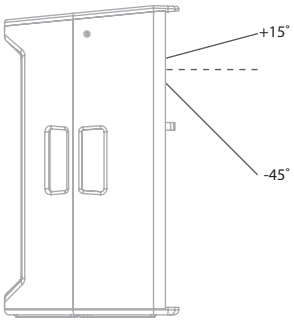
When removing and reinstalling the front grill to rotate the horn, ensure the nuts are not over tightened as this may make them difficult to remove in future or cause them to be damaged.

WARNING Ensure the box is securely located. If any doubt about the physical stability, tie the box down with ratchet straps to a secure base.

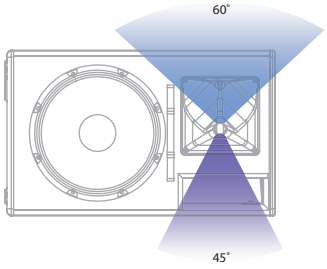
QM450A Wave Guide Examples



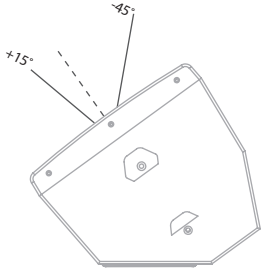
QM450A FOH Configuration (front)



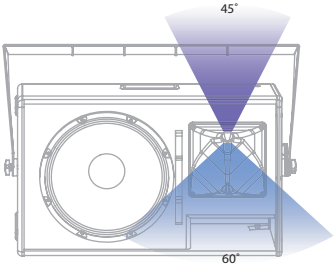
QM450A FOH Configuration (side)



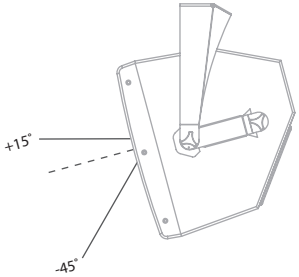
QM450A Foldback Configuration (front)



QM450A Foldback Configuration (side)

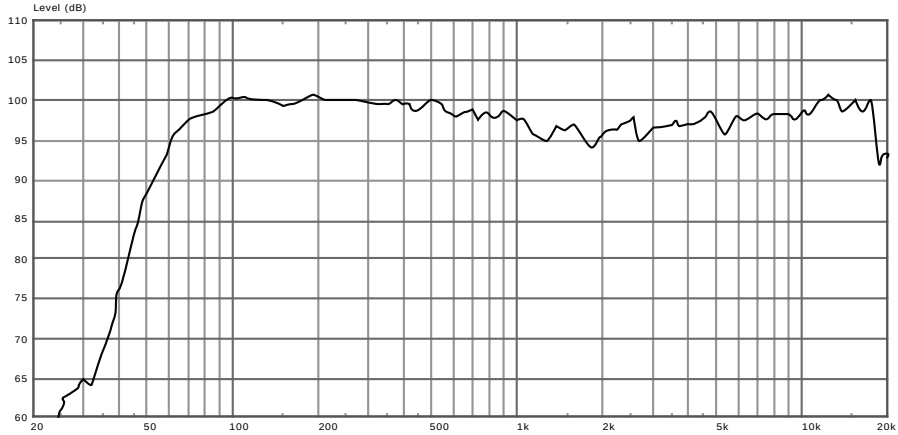


QM450A Horiztonal Configuration (front)



QM450A Horizontal Configuration (front)

QM450A Specifications



QM450A - Frequency Response - 1W, values scaled

Frequency Response (Hz)

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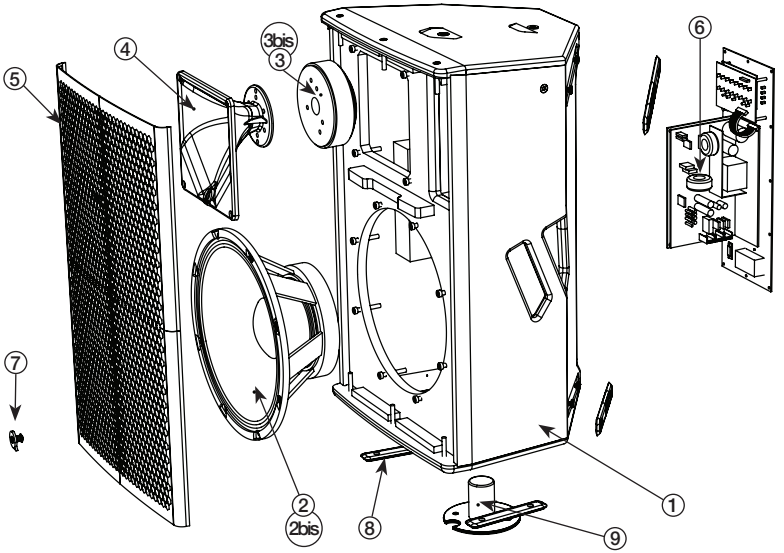
Technical Parameters	
Power Amplifier Module Output	**450 / 400+50 W RMS**
Frequency Response	**60 – 18 kHz (+/-3dB)**
Maximum SPL output @ 1m	**129.5dB @ 1kHz**
Input Impedance	**22kOhm balanced**
Amplifier Protection	**Limiter, Clip, short-circuit, on and off**
Connections	**1x XLR input** **1x XLR output link**
Controls	**Power , Volume (Gain), 110Hz high-pass Mode**
Indicators	**Power, Signal, Clip, Peak square LEDs**
Woofer Tweeter	**12” high power mid-bass woofer** **1” ferrite compression driver**
Directivity	**Asymmetric +15/-45 vertical** **45/60 horizontal**
Dimensions (HxDxW)	**620 x 380 x 346.5 mm**
Weight	**20kg Net**

*** Quest Engineering reserves the right to make changes in specifications, or products without prior notice.**

QM450A Reference Diagram



Item	Identification	Spare Part
1	QM450A wooden cabinet	QM350C
2	12” medium power woofer	T12001
2bis	Recone kit for 12” woofer	RT12001
3	1” exit ferrite compression driver	T1012
3bis	Replacement diaphragm for T1012	RT1012
4	Asymmetrical horn-flare	HWG350
5	Complete grill for QM350i/QM450A	HGQM350
6	Complete power module for QM450A	APM450A
7	Q-badge 25mm with spring loaded pin	HQB25
8	137mm rubber skids (x5)	HSK137
9	Pole mount plate	HPP350
Replaceable components of the power module		
Complete pre-amp PCB + LEDs + connectors		APRE450A
Amplifier Board module PCB with heat-sink		AAB450A
Connection plate for QM450A		HCP450A
Power switch complete block		EPS450A
Power voltage selector block		EVS450A
Volume knob		EVK450A

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Register Your Product

Thank you for choosing Quest. Please take the time to complete your product registration card which is included with the packaging.
Registering your Quest Engineering product will:

- CONFIRM YOUR WARRANTY
- REGISTER YOUR PRODUCT
- PROTECT YOUR NEW PRODUCT

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www.questaudio.net/registration

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